Evidence Based Library and Information Practice

Labour Costs for Inventory Control Less Expensive than Repurchasing

A Review of:

Sung, J. S., Whisler, J. A., & Sung, N. (2009). A cost-benefit analysis of a collections inventory project: A statistical analysis of inventory data from a medium-sized academic library. *Journal of Academic Librarianship*, *35*(4), 314-323.

Reviewed by:
Laura Newton Miller
Science & Engineering Librarian, Carleton University
Ottawa, Ontario, Canada
E-mail: laura_newtonmiller@carleton.ca

Abstract

Objective – To describe an inventory system that was created within the library and to show the cost-effectiveness of using the inventory system compared to the price of reacquiring mis-shelved books.

Design – Bibliometric study and cost-benefit analysis.

Setting – Medium-sized academic library in a rural community of the United States.

Subjects – Approximately 300,000 books from LC classifications D through H, N, P and Q, representing two thirds of the library's entire monograph collection.

Methods – The library created its own electronic inventory and shelf-reading program, using a laptop computer equipped with a hand-held scanner, to scan barcodes in the stacks. Library staff used the Microsoft Access database to update two files containing a shelf-list and an active-status list while the books were scanned. The program alerted the worker if books found had an active status (i.e., Missing, Renewed, Overdue, Charged), were not in the correct order, or were not in the system. Each transaction created a log which contained a time stamp (to the second), the call number and the barcode number. It also took note of scanning errors, books that were out of order, and books that were not on a shelf-list. After a complete section was examined, a list was produced to reveal the distance of mis-shelved books from their correct location and the amount of time

between each scan. The researchers used statistical analysis (using SPSS 15.0) to measure scan speed for each scan, mis-shelving rate and error distance of each mis-shelved book. In order to analyze the cost of labour to replace a book versus the cost of inventorying, the researchers estimated the salary costs of staff members involved in selection, acquisition and cataloguing. The library spent $440,000 USD in labour costs to purchase 15,000 monographs in one fiscal year (approximately $30.00 USD in labour costs per book). They multiplied this by 5300 books that were found to be "badly" mis-shelved (found beyond 25 books away from the proper position). Labour fees were used to determine costs of inventorying by calculating average scanning speed and cost per hour to pay someone to scan the entire half-million monograph collection.

Main Results – It took approximately 707 hours to scan 305,000 monographs. The average (mode) calculation for scans was 5 seconds for 80% of the barcodes, with an average (mean) of 8.35 seconds between scans. The longest average (mean) time for scanning barcodes was in the N section, followed by G, H, P, Q, D, E and F. A total of 291 books were found on the shelves with an "active" status (i.e., Charged (4), Overdue (7), Renewed (4), In Transit (24), and Missing (228)). Twenty-four books with the status "Miscellaneous" (i.e., At Bindery, Call Slip, Cataloguing Review, Damaged, and Mending) were also found on the shelves. Of the 15 active books in the categories "Charged", "Overdue" and "Renewed", ten were found in the proper position on the shelf. Of the 228 "Missing" books, 30% were scanned in the correct location, 10% were found 26 to 100 books away, and half were located over 100 books from their proper location. In addition to the books already marked as "Missing" in the catalogue, there were 516 books (.17% of the entire scanned section) still not found on the shelf after three searches over a period of 6 months. Of the 291 active status books found on the shelves, 52% were reused as of July 2008. (The inventory was completed at the end of 2006). Over 36% of books mis-shelved

further than 25 books from their correct location were reused. However, among all books scanned, only 17% were reused during the same time period. The researchers noted that inconsistencies between the call number as shown on the book label and how it appeared in the catalogue occurred 565 times. Of these discrepancies, 40% of the labels resulted in books being misplaced ten or fewer books away, 10% misplaced between 10 and 100 books away, and 35% misplaced more than 100 books away from the correct position. In general, 82% of mis-shelved books were found within 1 to 25 books away from their correct location. By calculating that 5300 books were mis-shelved beyond 25 books away from their proper position, labour costs were estimated to be at least $159,000 USD (5300 x $30.00 USD per book in labour costs). Costs for interlibrary loan were calculated at approximately $30.00 USD per transaction, and patron's time wasted trying to locate misplaced books was estimated at 30 minutes per book. This was much more than the labour costs associated with scanning books, which at an average speed of 8 seconds per book and $10.00 US per hour for scanning worked out to be 2.2 cents per book, or $11,000 USD to scan the entire half-million monograph collection.

Conclusion – The results appear to reveal that the labour costs for inventory control are less expensive than repurchasing or borrowing the same number of books.

Commentary

Stack services staff and student workers are usually those who have the important task of taking inventory of the library's collection. Shelf-reading is a common way of doing this, as well as by using a barcode reader and comparing to a shelf list. However, the "Library Stacks Management System" that is described in this study goes one step further by providing a way to notify proper staff of any inventory discrepancies immediately instead of staff having to wait to go back to the stacks at a later time to correct a problem. It is

also very useful to know how much time it takes to go through the inventory process. The researchers explain that past inventory studies are more descriptive than analytic. They are to be commended for the detailed analysis of inventory scanned, as this will help staff to better understand their collection and workflows. Because bibliometric studies focus on a specific set of data, it is important to replicate and make comparisons with other similar studies. This analysis mostly compares itself to one study in particular (Anderson, 1998). Similar research taken on by other libraries will be valuable to the community as a whole, since these studies work very well when building on one another's work.

However, some of the data described in this paper is misleading. For example, the researchers discuss books being mis-shelved a certain number of books away from the proper position. One must look in the footnotes to discover that the researchers actually assume that if 27 inches of the average shelf is taken up with books and that the average thickness of a book is set to one inch, this can then be converted into 25 books. As bibliometric studies depend on building on past studies, it would have been far more valuable to maintain descriptions similar to those in Anderson's study, which described major errors in mis-shelving as those books being out of place beyond the shelves before or after the correct shelf (Anderson, 1998). This would also make more sense for staff members who count in terms of bays and shelves as opposed to individual books.

There are several examples in which data analyzed with this new inventory system can provide valuable information to libraries regarding workflows and procedures. The researchers focused on the 15 books with "Active" statuses (Charged, Renewed, and Overdue) but do not go into much detail regarding reasons for 24 "Miscellaneous" books being found on the shelves. This includes books that say "At Bindery", "Call Slip", "Cataloguing Review", "Damaged", and "Mending". This is important information for departments that may want to examine their

workflows to ensure that these particular books do not get onto the shelves without a change in their status being noted. The researchers also focus on the fact that label discrepancies are minor in that 40% of these led to only very slight mis-shelving of books. However they do not comment on the fact that 35% led to books being mis-shelved over 100 books away. Again, this is an area in which libraries will want to study workflows in order to make sure mistakes like this are not a burden to the patrons. Finally, of the 228 "Missing" books, 30% were scanned in the correct location. This particular library may want to examine its procedures for labelling something in the catalogue as "missing", as one would assume that it takes time for the staff to change the item's status in the catalogue, when it may have been more efficient for a staff member to check first to find the book in the correct location.

As part of the cost-benefit analysis, it would have been valuable to read commentary on the costs of various library purchasing programs (e.g., Coutts, Yankee Book Peddler) that in some respects have made selection and purchasing more streamlined. The researchers discuss the costs of interlibrary loan transactions and acknowledge that the study they were focusing on was over ten years old. More recent research regarding acquisition costs and interlibrary loan transaction costs would be beneficial to this and other studies.

The cost-benefit analysis would be further improved by a description of work procedures. Salaries should also be described more clearly within the paper as opposed to making reference to them in the footnotes. Job descriptions would be helpful in determining the meaning of salary numbers. For example, assuming that collection development falls under Reference Services (or something similar), many hours are devoted to instruction, reference desk, committee work, and professional activities. Because this is not sufficiently explained in the study, the cost-benefit analysis is very difficult to replicate. The researchers also fail to describe the initial labour costs involved in developing the

inventory system in-house. There would be a significant one-time cost, but maintenance and staff training expenses would also have to be taken into consideration.

There is great value in having a library collection in order. Having an in-house inventory system that gives detailed analysis is of great benefit to the library. Perhaps one cannot sufficiently put a price on the value of such a system that forces libraries to re-examine their workflows. The cost-benefit analysis is complex because there is so much to take into consideration. Perhaps comparing the labour costs of the current inventory system to another way of taking inventory (e.g., traditional shelf reading) would be more beneficial and less complicated for librarians trying to decide if they want to spend money on a detailed in-house inventory system.

References

Anderson, D. R. (1998). Method without madness: Shelf-reading methods and project management. *College & Undergraduate Libraries, 5*(1), 1-13.